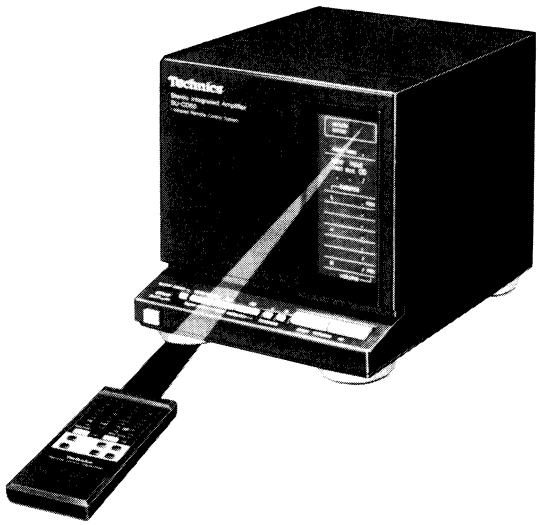
ORDER NO. HAD8705140C8

Service Manual

Amplifier

Stereo Integrated Amplifier

SU-CD50



Color

(S) .....Silver Type
(K) .....Black Type

Area

Color	Area
(S)(K)	(E) .....Continental Europe.
(S)(K)	(EGA) .....F.R.Germany.
(S)(K)	(EB) .....Belgium.
(S)(K)	(EK) .....United Kingdom.
(S)(K)	(EF) .....France.
(S)(K)	(EH) .....Holland.
(S)(K)	(Ei) .....Italy.
(S)(K)	(XL) .....Australia.

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

40 Hz ~ 20 kHz continuous power output	
both channels driven	2 x 27 W (6Ω)
DIN power output	2 x 30 W (6Ω)
Total harmonic distortion	
rated power at 40 Hz ~ 20 kHz	0.7% (6Ω)
rated power at 1 kHz	0.03% (6Ω)
half power at 40 Hz ~ 20 kHz	0.05% (6Ω)
half power at 1 kHz	0.02% (6Ω)
Intermodulation distortion	
rated power at 250 Hz:8 kHz = 4:1, 6Ω	0.7%
rated power at 50 Hz:7 kHz = 4:1,SMPTE,6Ω	0.7%
Power bandwidth	
both channels driven,-3 dB	5 Hz ~ 50 kHz (6Ω,THD 0.5%)
Residual hum and noise	0.5 mV
Damping factor	40 (6Ω)
Input sensitivity and impedance	
CD,AUX,TAPE	150mV/22 kΩ
S/N	
rated power(6Ω)	
CD,AUX,TAPE	90 dB (IHF,A:95 dB)
Frequency responce	
CD,AUX,TAPE	5 Hz ~ 100 kHz (-3 dB)
	+0, -0.2 dB (20 Hz ~ 20 kHz)
Super bass	100 Hz, +8 dB
Muting	-20 dB
Output voltage and impedance	
TAPE,REC OUT	150 mV,600 Ω
Channel balance, AUX 250 Hz ~ 6,300 Hz	±1 db
Channel separation, AUX 1 kHz	50 dB
Load impedance	6 Ω ~ 16 Ω

■ GENERAL

Power consumption	190 W
Power supply	
For United Kingdom and Australia	AC 50 Hz/60 Hz, 240 V
For continental Europe	AC 50 Hz/60 Hz,220 V
For others	AC 50 Hz/60 Hz, 110 V/127 V/220 V/240 V
Dimensions (W x H x D)	126 x 127 x 185 mm (4-31/32" x 5" x 7-9/32")
Weight	3.2 kg (7.0 lb.)

Notes:
1.Specifications are subject to change without notice. Weight and dimensions are approximate.
2.Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

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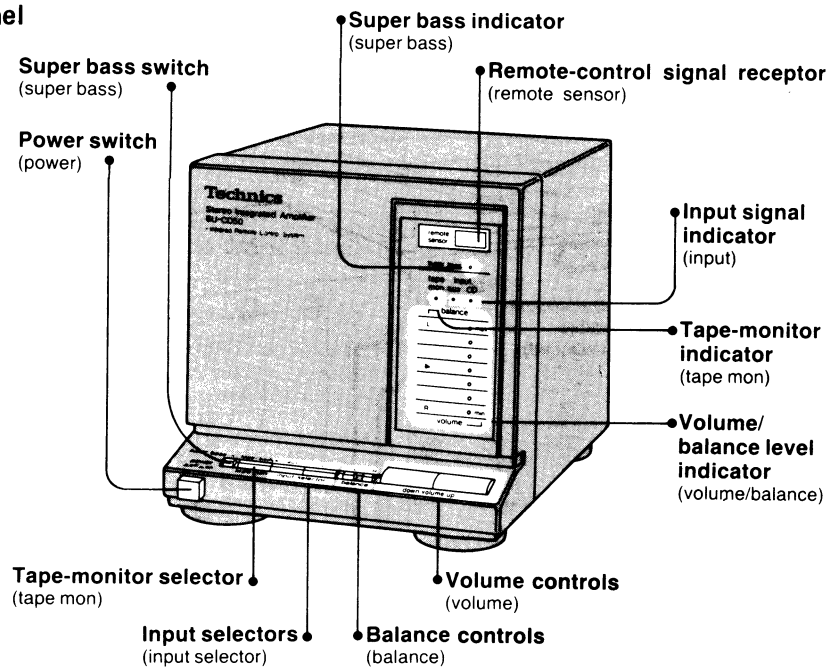
Technics

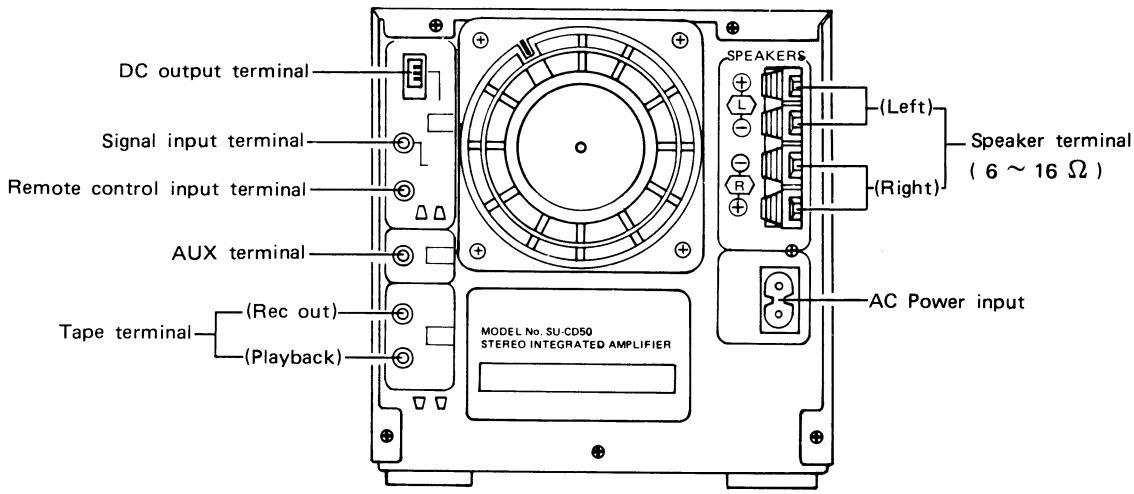
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ LOCATION OF CONTROLS

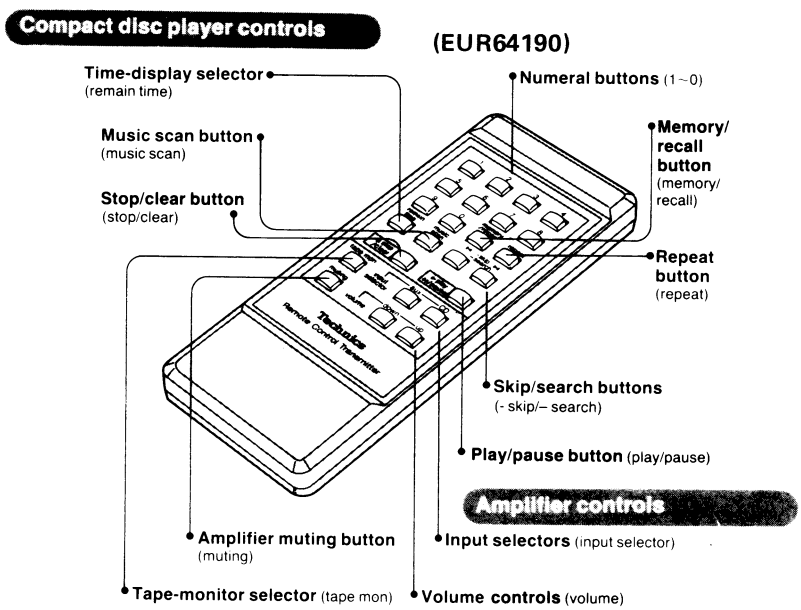
• Front panel



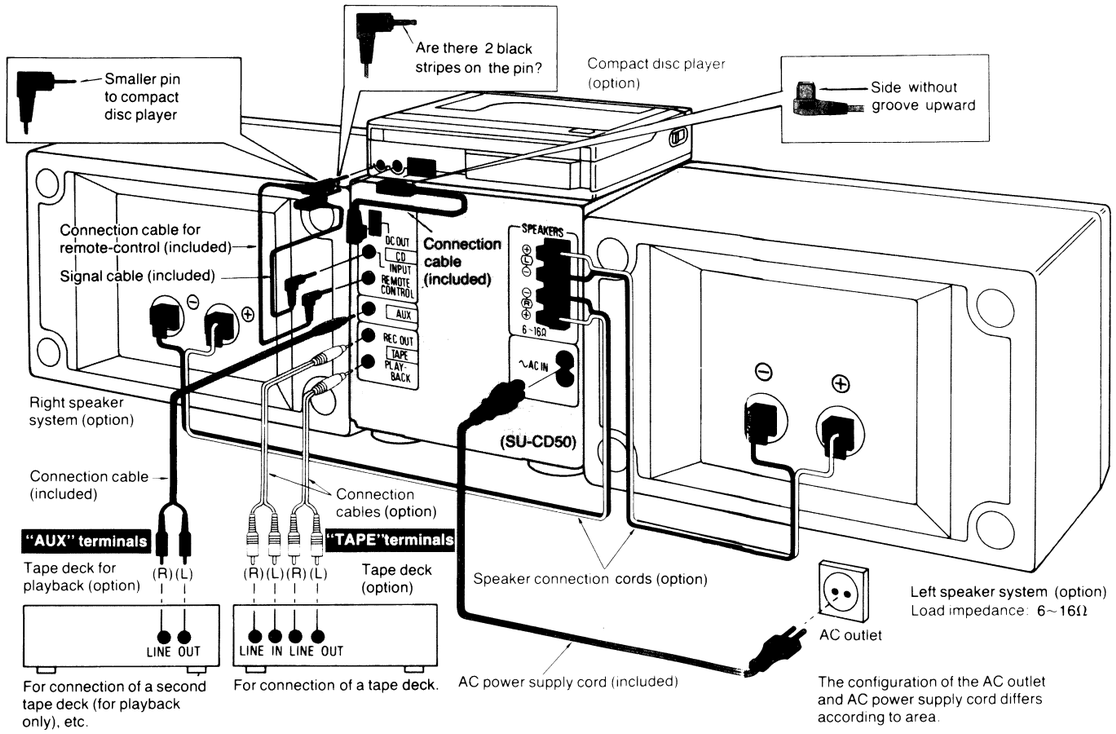
• Rear panel



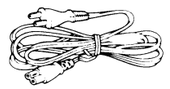
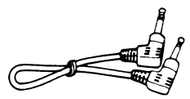
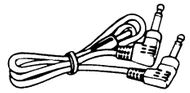
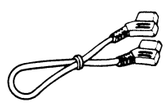
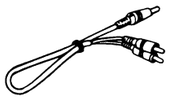
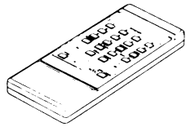
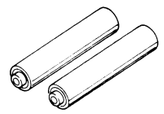
• Remote control transmitter



■ CONNECTIONS



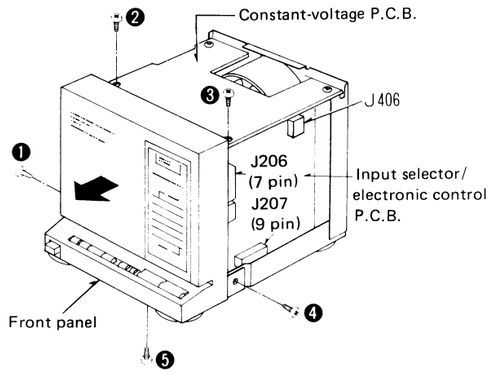
■ ACCESSORIES

 AC power supply cord * SJA173 (XL) * SFDAC05G02 (EK) * SFDAC05E02 (EB) * SFDAC05E03 (others)	 Signal cable (CD player) * SJP2200	 Remote control cable * SJP2201–2	 DC cable * SJP2202
 Signal cable (AUX) * SJPD5	 Remote control transmitter * EUR64190	 Batteries * UM–3NE	

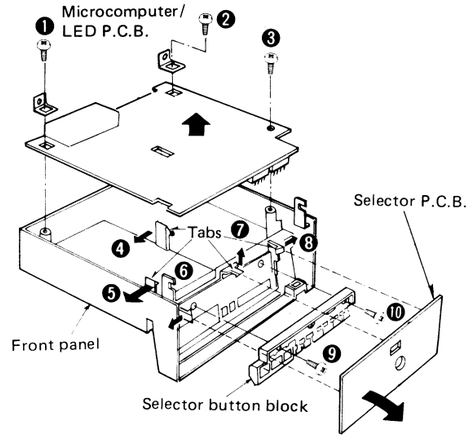
■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	1. Remove the 4 screws from the rear panel of the cabinet.

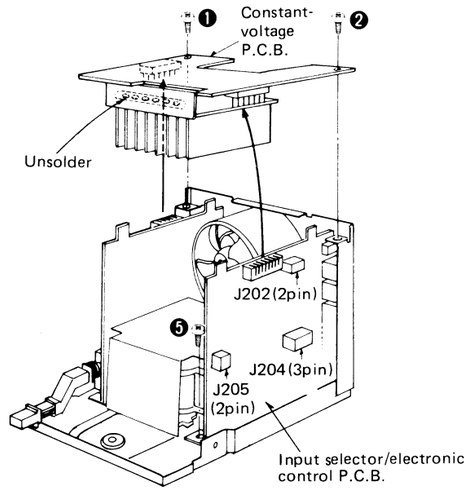
Ref. No. 2	How to remove the front panel
Procedure 1 →2	1. Remove the 5 screws (❶ ~ ❺). 2. Remove the 3 connectors (J206, J207, J406).



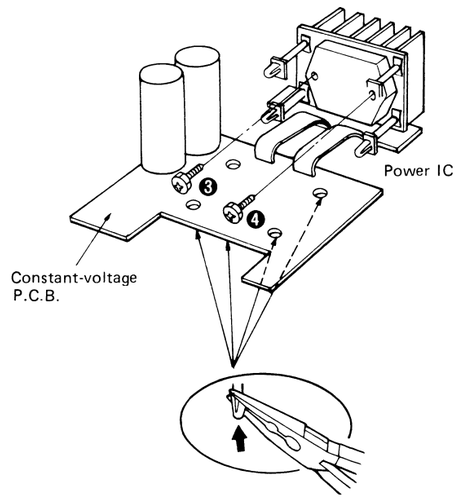
Ref. No. 3	How to remove the microcomuter/LED P.C.B. selector P.C.B. and selector button block
Procedure 1 →2 →3	1. Remove the 3 screws (❶ ~ ❸). 2. Undo the 2 tabs (❹ , ❺) and remove the microcomputer/LED P.C.B. 3. Undo the 3 tabs (❻ ~ ❽) and remove the selector P.C.B. 4. Unscrew the 2 screws (❾ , ❿) and remove the selector button block.



Ref. No. 4	How to remove the power IC and input selector/electronic control P.C.B.
Procedure 1 →2 →4	1. Unscrew the 2 screws (❶ , ❷) and remove the constant-voltage P.C.B.

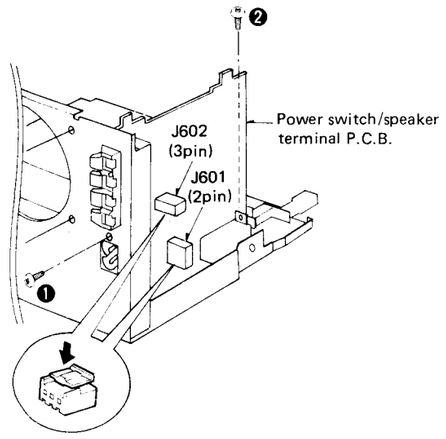


2. Detach the 4 spacers using cutting pliers.
3. Unsolder the power IC.
4. Remove the 2 screws (❸ , ❹).
5. When mounting the power IC, apply silicone compound (SZ0GYG6260) over its contactarea.

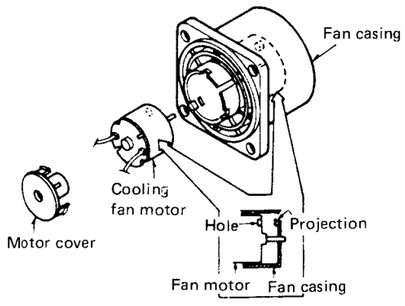


6. Remove the screw (❺).
7. Disconnect the 3 connectors (J202, J204, J205) and remove the input selector/electronic control P.C.B.

Ref. No. 5	How to remove the power switch/ speaker terminal P.C.B.
Procedure 1 →2 →4 →5	1. Remove the 2 screws (❶ , ❷) 2. Disconnect the 2 connectors (J601, J602) and remove the power switch/ speaker terminal P.C.B.

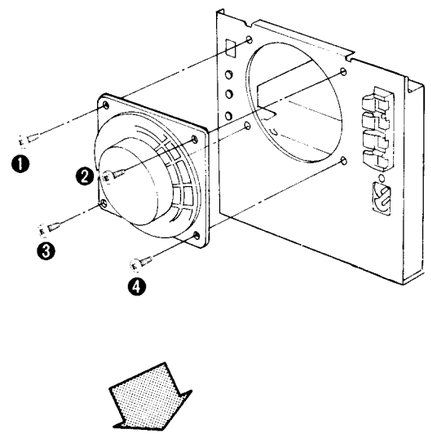


3. Remove the motor cover.
4. Remove the motor from the fan casing.

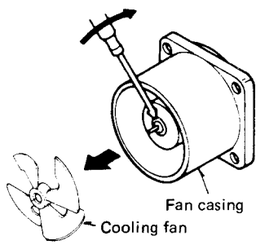


5. When mounting the motor fan, align the fan casing's projection with the hole of the fan motor.

Ref. No. 6	How to remove the fan motor
Procedure 1 →6	1. Remove the 4 screws (❶ ~ ❹).



2. Insert a screwdriver at the root of the cooling fan. Force it out of the motor shaft.



■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is switched ON.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted" , or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.
If this occurs, follow the procedure outlined below:

1. Switch OFF the power.
2. Determine the cause of the problem and correct it.
3. Switch ON the power once again.

Note:
When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

■ FUNCTION OF IC TERMINALS

• IC101 (LC7818)

Pin No.	Mark	Description
1, 30	A1, A2	Audio (CD) signal input. "L" input given when the CD player starts.
2, 29	B1, B2	Not used.
3, 28	C1, C2	Audio (AUX) signal input.
4, 27	D1, D2	Not used.
5, 26	E1, E2	Not used.
6, 25	SOURCE 1 SOURCE 2	Audio (Recout) signal output.
7, 24	OUT 1 OUT 2	Audio signal output.
8, 23	TM 1 TM 2	Audio (Playback) signal input.
9	VEE	Power supply (negative).
10	$\overline{\text{TMOUT}}$	Input select LED driver output.
11	$\overline{\text{ACLT}}$	Analog switch (CD) control input/output.
12	$\overline{\text{BCLT}}$	————————
13	$\overline{\text{CCLT}}$	Analog switch (AUX) control input/output.
14	$\overline{\text{DCLT}}$	————————
15	$\overline{\text{ECLT}}$	————————
16	Vss	Grounding terminal.
17	$\overline{\text{TMCLT}}$	TAPE/SOURCE switch input.
18	$\overline{\text{JNIT}}$	————————
19	$\overline{\text{MIN}}$	————————
20	CR	Clock oscillation input/output.
21	MUTE	Muting signal output.
22	VDD	Power supply (positive).

• IC203 (TC9177P) Attenuator

Pin No.	Mark	Description
1	V_{SS}	Power supply (negative).
2, 3 18, 19	L-Loudness 1, 2 R-Loudness 1, 2	Loudness terminal. (Not used)
4 17	L-OUT 1 R-OUT 1	10dB attenuator output. Signal via IN is attenuated by 8 steps, 10dB each, from 0 ~ 70dB.
5 16	L-IN 1 R-IN 1	10dB attenuator input.
6 15	A-GND	AC grounding terminal.
7 14	L-IN 2 R-IN 2	2dB attenuator input.
8 13	L-OUT 2 R-OUT 2	2dB attenuator output. Signal via IN is attenuated by 5 steps, 2dB each, from 0 ~ 8dB.
9	GND	Grounding terminal.

Pin No.	Mark	Description
11	DATA/SI	Attenuation/cahnnel select data inpu 20-bits input activated by CK signal.
10	CLK	Clock input. Used to take in data at DATA pin.
12	STB/DTS	Strobe input. Attenuation/channel select data from DATA and CK pins are lapped when this pin is at "H" level. Previous data remain the same while this pin does not reach "H" level.
20	V_{DD}	Power supply (positive).

• IC403 (LC6523C–3068) Microcomputer

Pin No.	Mark	Description
①	LED 4	"L" level output is given to each pin according to the volume attenuation in order to light up the volume level LED.
③	LED 5	
④	LED 6	
⑤	LED 7	
㉘	LED 1	
㉙	LED 2	
㉚	LED 3	
⑥	BACK UP	• When this pin is at "L" level, the microcomputer is operated by the back-up circuit. (No. ⑲ pin alone receives an input, all the others not.) • When this pin is at "H" level, No. ⑨ pin (POWER ON) gives an "L" level output if No. ⑫ pin (POWER SW) is at "H" level. No. ⑨ pin (POWER ON) is at "H" level, however, if the remote control's power on/off RAM data are off.
⑦	REMOTE	• Data codes reach here from the remote control receiver. (For data codes, refer to the remote control transmitter description.)
⑧	AMP	• When this pin receives an "H" level input, the amplifier turns on to start the operation. • When this pin receives an "L" level input, the amplifier turns off to stop receiving the matrix key. Power on/off code alone is used to enable the remote control. • Just when this pin's input comes from "H" to "L" level, the LED1 ~ LED7 and LOUD pins become "H".
⑪	DECK	• Not used.
⑫	ST/DTS	• When "CD" code is fed from the remote control to No. ⑥ pin, the DTS code is outputted at No. ⑫ pin for the CD player operation. SELECTOR code is then outputted to make the input selector into CD mode.
⑬	DATA/S1	Together with No. ⑫ pin, Volume UP/DOWN, Balance L/R and Super-bass signals are fed to the attenuator IC.
⑭	CLK	
⑮	OSC 2	Crystal hook-up terminals for internal clock oscillator.
⑯	OSC 1	

–dB \ LED	1	2	3	4	5	6	7
Pin No.	㉘	㉙	㉚	①	③	④	⑤
0 ~ –4dB	○	○	○	○	○	○	○
–6 ~ –10	○	○	○	○	○	○	
–12 ~ –18	○	○	○	○	○		
–20 ~ –26	○	○	○	○			
–28 ~ –36	○	○	○				
–38 ~ –52	○	○					
–54 ~ ∞	○						

○ mark
= Light up
= "L" level output

Pin No.	Mark	Description
⑲	RES	Reset pulse input terminal ("L" at microcomputer reset).
⑳	K2	Input terminal for matrix keys.
㉑	K1	Input terminals for matrix keys (for Balance and Volume controls).
㉒	K0	
㉓	D_A/SO	Input selector 4-bit BCD codes are outputted with Remote Control codes.
㉔	D_B	
㉕	D_C	
㉖	D_D	
㉗	LOUD	• Super-bass on/off signal output terminal. • By pressing the SUPER-BASS key, an "L" level output is given at this pin to turn on the super-bass switch. Push the key again, and an "H" level output will come to turn off the super super-bass.

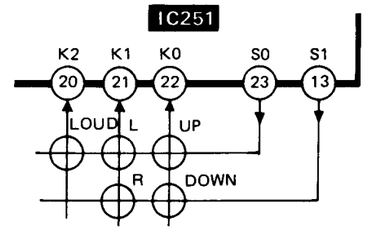
[List of BCD codes]

Mode \ Pin	D_A	D_B	D_C	D_D
CD	L	L	H	H
AUX	L	H	L	L
Tape	L	H	H	L

Notes:

(A) Key matrix, scanning signal input/output pins and their functions ("H" level scan)

OUT \ IN	K0 ㉒	K1 ㉑	K2 ⑳
S0 ㉓	Volume UP	Balance L	Super-bass
S1 ⑬	Volume DOWN	Balance R	———



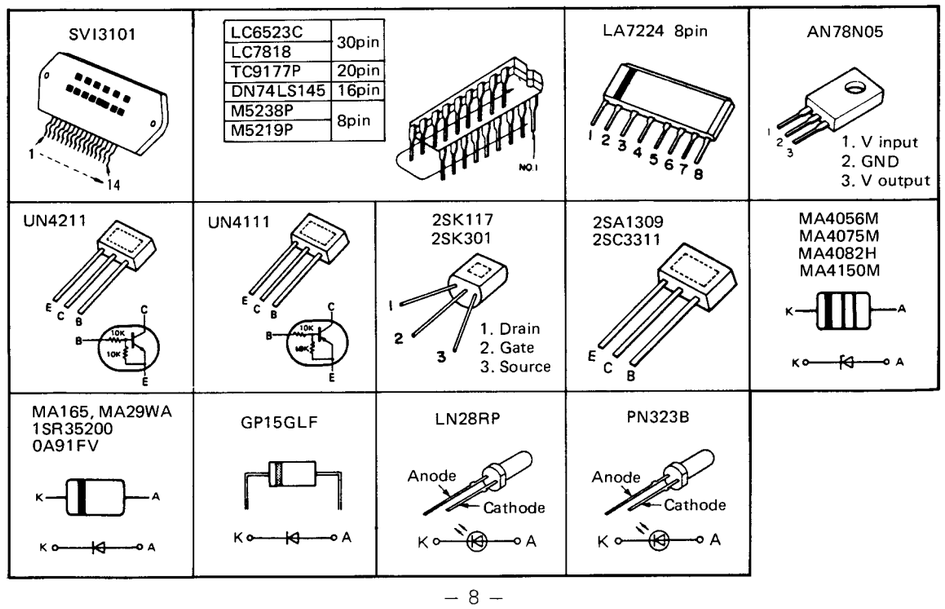
(B) Volume UP/DOWN

1. Push the key once, and the volume will turn up (or down) by 2dB each steps.
2. Keep the key depressed for more than 250msec, and the volume will turn up (or down) all the way automatically.
3. An "L" level output is given at LED1 ~ LED7 pins according to the volume attenuation.

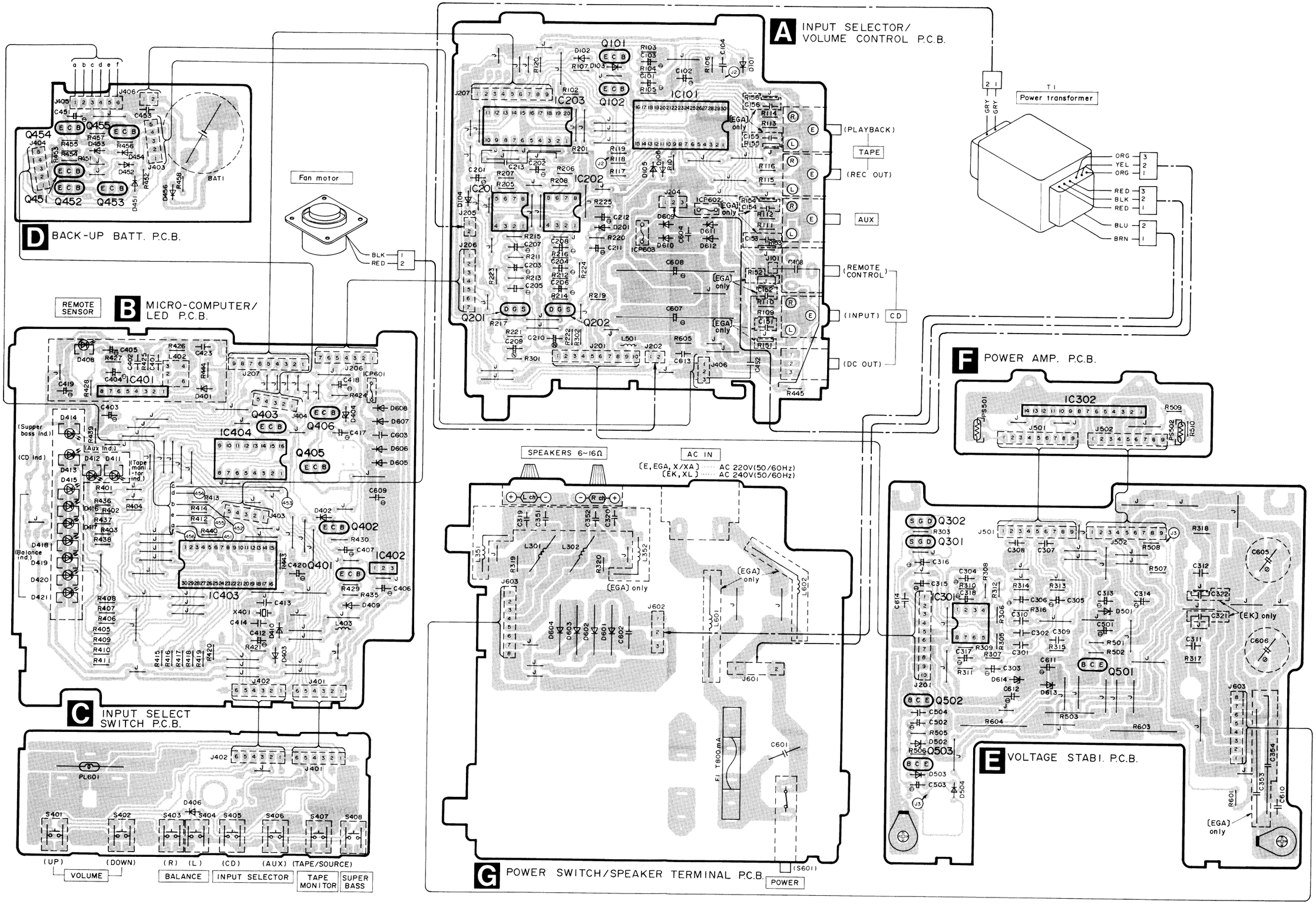
(C) Balance LEFT/RIGHT

1. Push the key once, and the balance will shift to the left (or right) channel by 2dB. At the same time, the "Volume/Balance" indicator (LED1 ~ LED7) is switched to the Balance position. (The Balance indication goes on for about 4 ~ 6 seconds after the Balance key is released.)
2. Keep the key depressed for more than 500msec, the automatic shift mode will be invited.

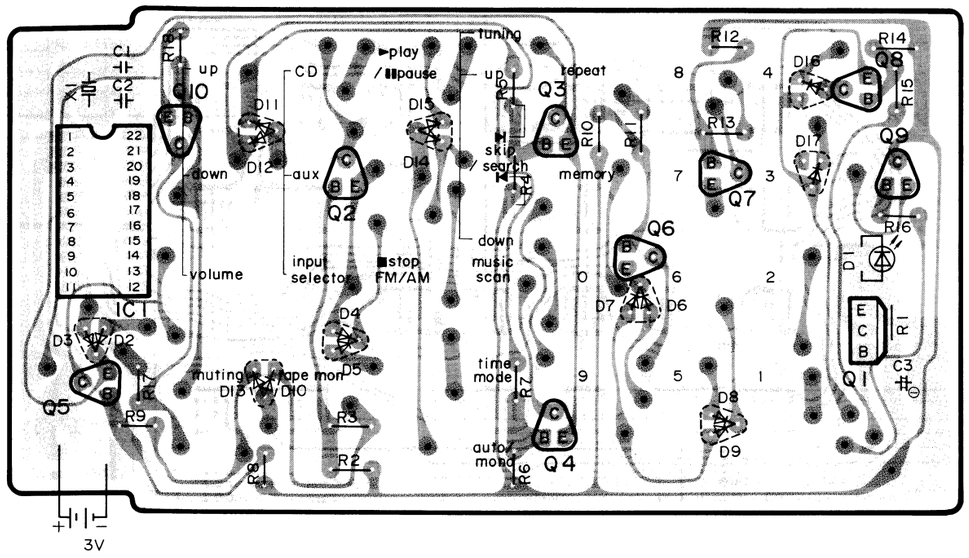
• Terminal guide of transistors, diodes and IC's



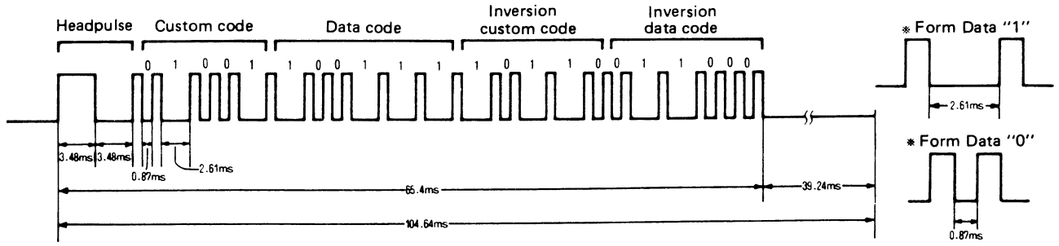
■ PRINTED CIRCUIT BOARDS



• **Remote Control Unit (Transmitter)**



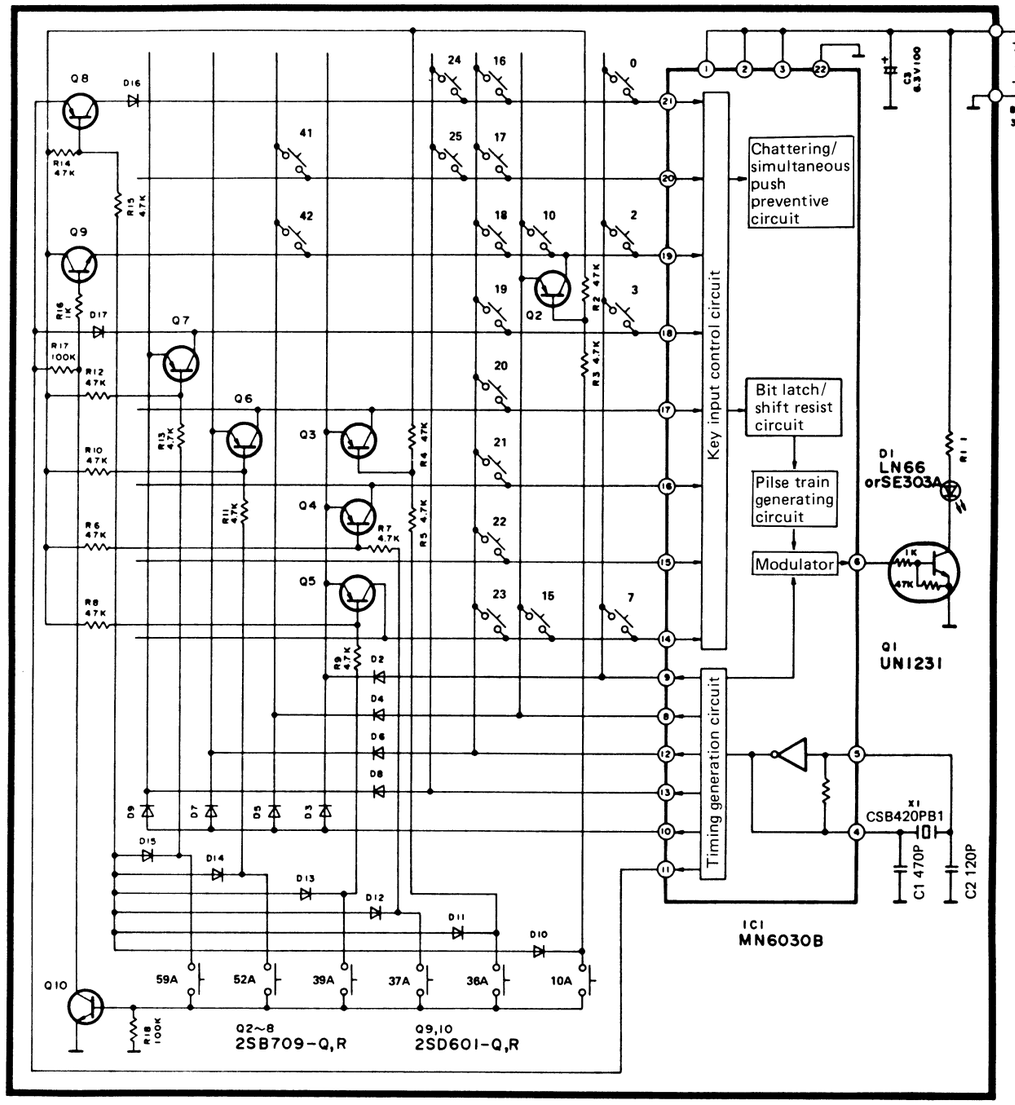
• **Key number description and data code of remote control transmitter (Example. key No. 1)**



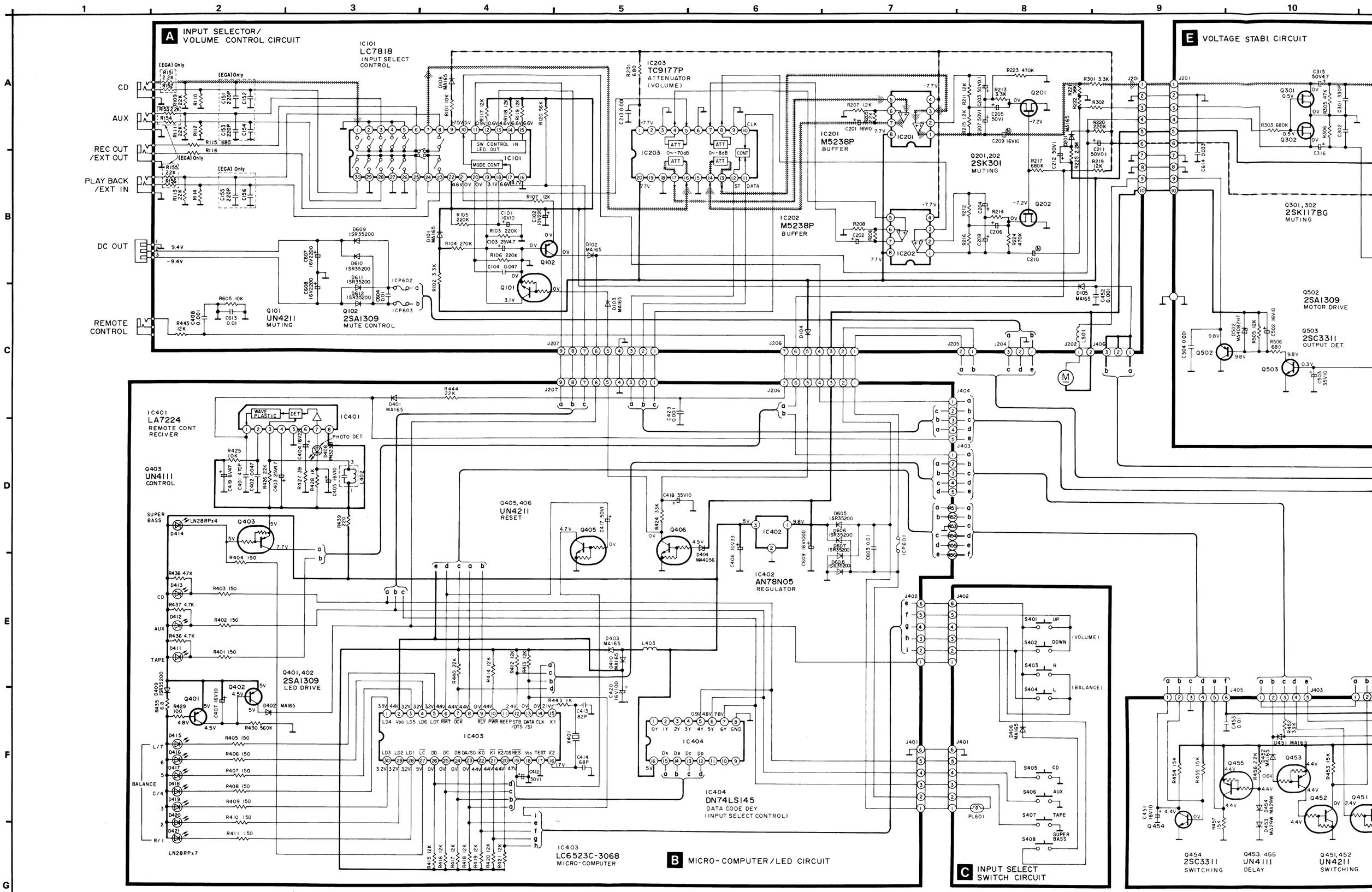
Key No	Command	Custom code	Data code	Key No	Command	Custom code	Data code
0	stop/clear	01100	000000	22	numeric 7	01100	011010
2	skip/search ⏮	01100	010000	23	numeric 8	01100	111010
3	skip/search ⏭	01100	110000	24	numeric 9	01100	000110
7	repeat	01100	111000	25	numeric 0	01100	100110
10	play/pause	01100	010100	41	remain time	01100	100101
15	music scan	01100	111100	42	memory/recall	01100	010101
16	numeric 1	01100	000010	10A	tape mon	01001	001010
17	numeric 2	01100	100010	36A	volume up	01001	100100
18	numeric 3	01100	010010	37A	volume down	01001	100101
19	numeric 4	01100	110010	39A	muting	01001	100111
20	numeric 5	01100	001010	52A	aux	01001	110110
21	numeric 6	01100	101010	59A	CD	01001	111011

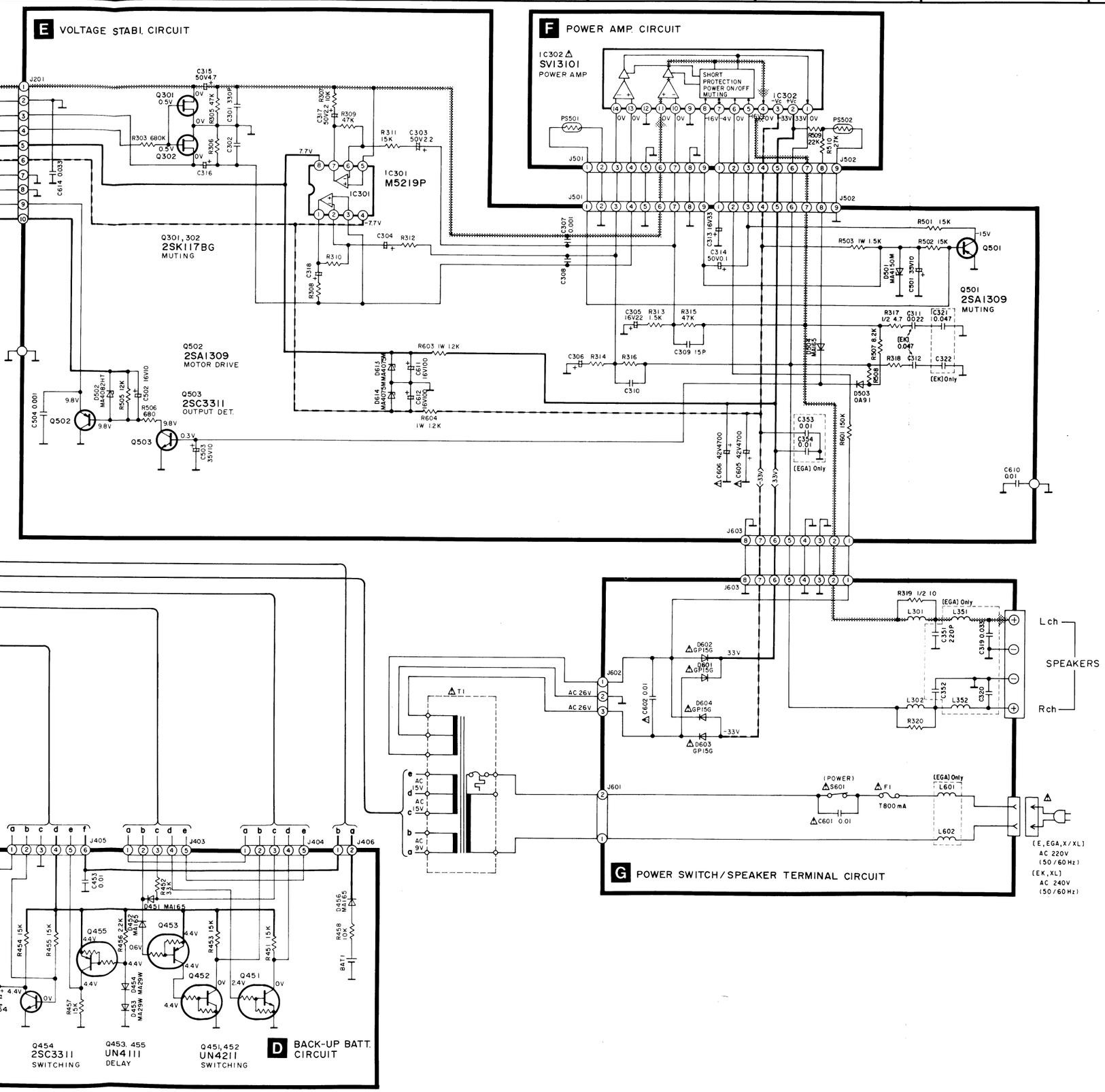
■ SCHEMATIC DIAGRAM

• **Remote control transmitter**



Key No.	Description	Key No.	Description	Key No.	Description
0	stop/clear	18	numeric 3	41	remain time
2	skip/search ⏮	19	numeric 4	42	memory/recall
3	skip/search ⏭	20	numeric 5	10A	tape mon
7	repeat	21	numeric 6	36A	volume up
10	play/pause	22	numeric 7	37A	volime down
15	music scan	23	numeric 8	39A	muting
16	numeric 1	24	numeric 9	52A	aux
17	numeric 2	25	numeric 0	59A	CD


A INPUT SELECTOR/ VOLUME CONTROL CIRCUIT
IC101 LC7818 INPUT SELECT CONTROL
IC203 TC9177P ATTENUATOR (VOLUME)
IC201 M5238P BUFFER
IC202 M5238P BUFFER
Q201,202 2SK301 MUTING
Q301,302 2SK117BG MUTING
Q101 UN4211 MUTING
Q102 2SA1309 MUTE CONTROL
Q501 2SA1309 MOTOR DRIVE
Q503 2SC3311 OUTPUT DET.
IC401 LA7224 REMOTE CONT RECIVER
Q403 UN4111 CONTROL
Q405,406 UN4211 RESET
IC402 AN78N05 REGULATOR
Q401,402 2SA1309 LED DRIVE
IC403 LC6523C-3068 MICRO-COMPUTER
IC404 DN74LS145 DATA CODE DEY (INPUT SELECT CONTROL)
B MICRO-COMPUTER/LED CIRCUIT
C INPUT SELECT SWITCH CIRCUIT
E VOLTAGE STABI. CIRCUIT
Q454 2SC3311 SWITCHING
Q453, 455 UN4111 DELAY
Q451,452 UN4211 SWITCHING
CD
AUX
REC OUT /EXT OUT
PLAY BACK /EXT IN
DC OUT
REMOTE CONTROL
SUPER BASS
BALANCE
TAPE
(VOLUME)
(BALANCE)
S401 UP
S402 DOWN
S403 R
S404 L
S405 CD
S406 AUX
S407 TAPE
S408 SUPER BASS



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology)

Note:

1. S401 : Volume, "Up" switch.
2. S402 : Volume, "Down" switch.
3. S403 : Balance, "R" switch.
4. S404 : Balance, "L" switch.
5. S405 ~ S407 : Input selectors, "CD" mode currently selected. S405: CD, S406: AUX, S407: TAPE
6. S408 : Super-bass switch in "off" position.
7. S601 : Power switch in "on" position. (▀ off, ▂ on)
8. Left-cahnnel CD signal route
   - ⊕ B voltage line
   - ⊖ B boltage line
9. Indicated voltage values are the standard values for the DC electronic circuit tester (high-impedance) with the ground point taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
10. Important safety notice:
    Components identified by △ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.

* The DC output voltage was measured with out the portable CD player (SL-XP5) being connected.

*** Caution!**

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taknig care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

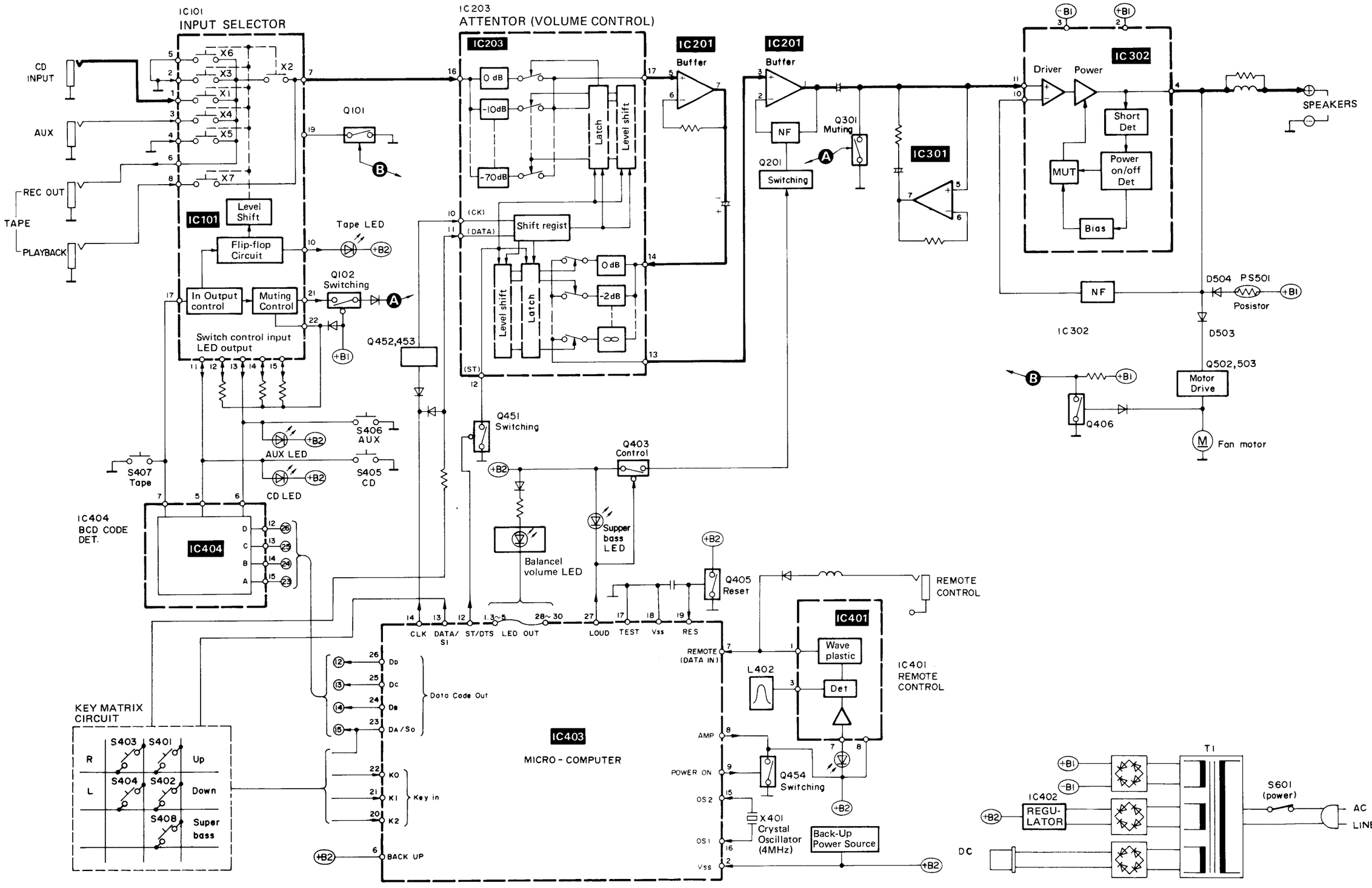
CAUTION:
This lithium battery is a critical component (Type No. BR2325-1VC. Mfrd by Matsushita Battery Industrial Co., Ltd.). Please observe for the proper polarity and the exact location when replacing it and soldering the replacement lithium battery in.

LITIUM PARISTO!
Pariston saa vaihtaa ainoastaan saman valmistajan saman tyyppiseen paristoon.
Pariston virheellisestä käsittelystä syntyy rajähdysvaara.

VARNING:
Detta litiumbatteri (av typ Nr. BR2325-1VC, tillverkad av Matsushita Battery Industrial Co., Ltd.) är en kritisk komponent. Var säker om att iaktta korrekt polaritet och exakt läge av litiumbatteriet under ersättning och lödning av ersättningsbatteriet.

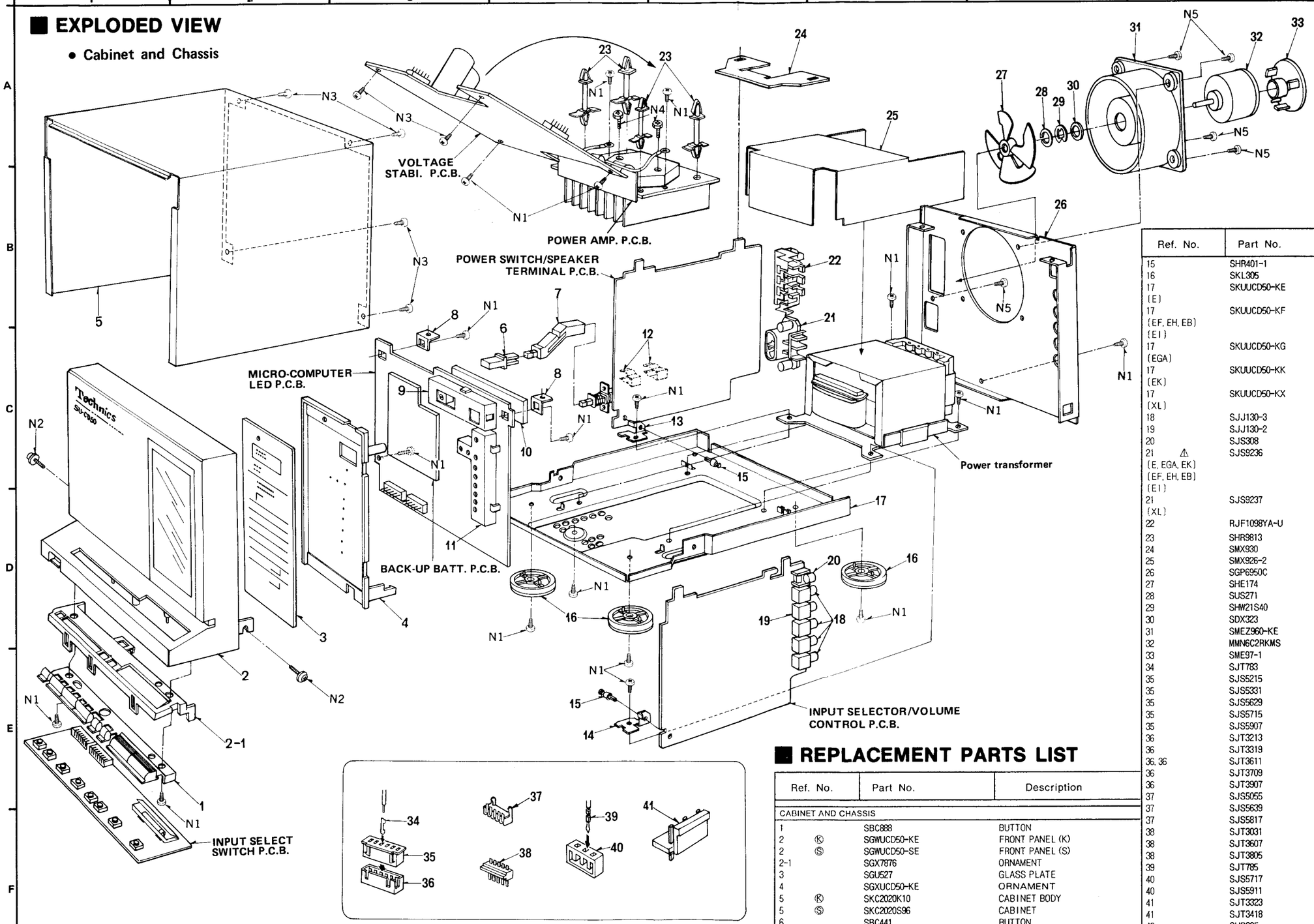
ADVARSEL:
Lithiumbatteriet er en vigtig komponent (type nr BR2325-1VC. Fremstillet af Matsushita Battery Industrial Co., Ltd.). Husk rigtig polaritet og placering ved udskiftning og når De lodder det nye lithiumbatteri fast.

■ BLOCK DIAGRAM



■ EXPLODED VIEW

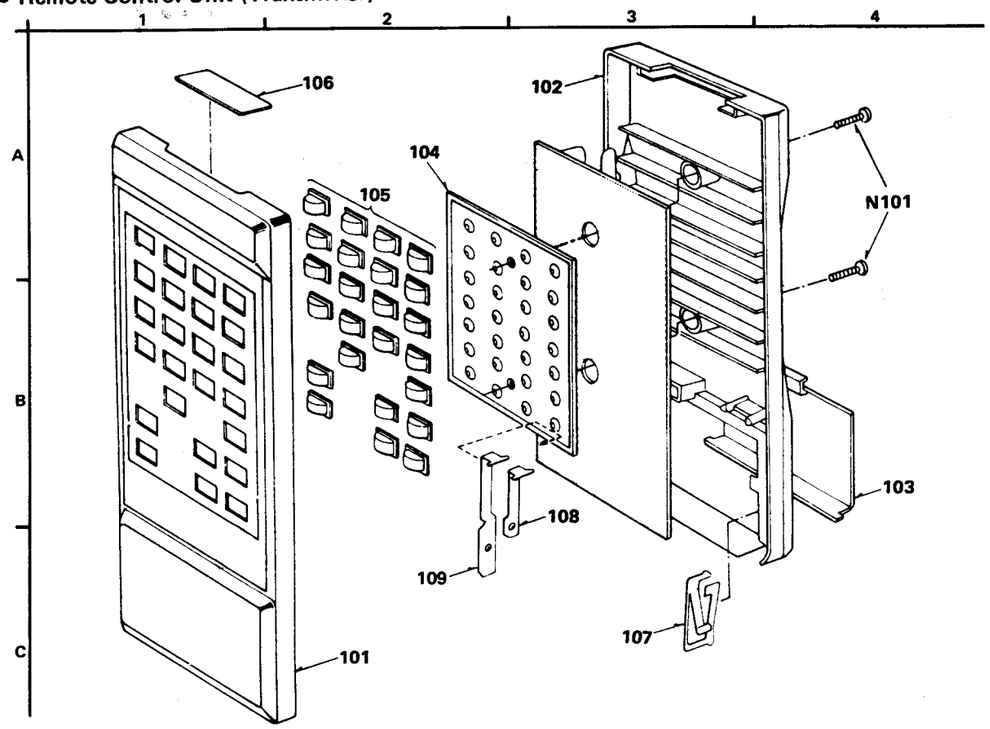
• Cabinet and Chassis



■ REPLACEMENT PARTS LIST

Ref. No.		Part No.	Description
CABINET AND CHASSIS			
1		SBC888	BUTTON
2	Ⓚ	SGWUCD50-KE	FRONT PANEL (K)
2	Ⓢ	SGWUCD50-SE	FRONT PANEL (S)
2-1		SGX7876	ORNAMENT
3		SGU527	GLASS PLATE
4		SGXUCD50-KE	ORNAMENT
5	Ⓚ	SKC2020K10	CABINET BODY
5	Ⓢ	SKC2020S96	CABINET
6		SBC441	BUTTON
7		SUB201	ROD
8		SUW3038	BRACKET
9		SMC6405	SHIELD COVER
10		SMC6406	SHIELD PLATE
11		LN112375P	DIODE, GAASP
12		SJT390	FUSE HOLDER
13		SUW3039-1	BRACKET
14		SUW3039	BRACKET
15		SHR401-1	PIN
16		SKL305	LEG,CASTER
17 (E)		SKUUCD50-KE	BOTTOM BOARD
17 (EF, EH, EB) (EI)		SKUUCD50-KF	BOTTOM BOARD
17 (EGA)		SKUUCD50-KG	BOTTOM BOARD
17 (EK)		SKUUCD50-KK	BOTTOM BOARD
17 (XL)		SKUUCD50-KX	BOTTOM BOARD
18		SJJ130-3	JACK
19		SJJ130-2	JACK
20		SJS308	CONNECTOR
21 (E, EGA, EK) (EF, EH, EB) (EI)	⚠	SJS9236	AC INLET
21 (XL)		SJS9237	SOCKET
22		RJF1098YA-U	TERMINAL BOARD
23		SHR9813	PLASTIC SPACER
24		SMX930	SHIELD SPACER
25		SMX926-2	SHIELD SPACER
26		SGP6950C	REAR PANEL
27		SHE174	FAN
28		SUS271	SPRING
29		SHW21S40	WASHER
30		SDX323	WHEEL
31		SMEZ960-KE	MOTOR COVER
32		MMN6C2RKMS	DC MOTOR
33		SME97-1	ANGLE
34		SJT783	CONTACT
35		SJS5215	CONNECTOR
35		SJS5331	CONNECTOR
35		SJS5629	CONNECTOR(6-P)
35		SJS5715	SOCKET(7P)
35		SJS5907	SOCKET
36		SJT3213	CONNECTOR
36		SJT3319	CONNECTOR
36, 36		SJT3611	CONNECTOR(6-P)
36		SJT3709	CONNECTOR(7-P)
36		SJT3907	TERMINAL
37		SJS5055	SOCKET
37		SJS5639	SOCKET
37		SJS5817	JACK,SOCKET
38		SJT3031	TERMINAL
38		SJT3607	TERMINAL
38		SJT3805	CONNECTOR
39		SJT785	CONTACT
40		SJS5717	SOCKET
40		SJS5911	CONNECTOR
41		SJT3323	LUG TERMINAL
41		SJT3418	LUG TERMINAL
42		SHR325	CORD CLAMPER
43		SJS9104	SOCKET
SCREWS,WASHERS AND NUTS			
N1		XTB3+6JFZ	TAPPING SCREW
N2		SNE2117-1	SCREW
N3		XTBS3+8JFZ1	SCREW
N4		SNE2118	SCREW
N5		XTB3+10JFZ	SCREW

• **Remote Control Unit (Transmitter)**



■ REPLACEMENT PARTS LIST

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	MN6030B	I.C., TRANSMITTER
TRANSISTORS		
Q1	UN1231	TRANSISTOR
Q2, Q3	2SB709A	TRANSISTOR
Q4, Q5	2SB709A	TRANSISTOR
Q6, Q7	2SB709A	TRANSISTOR
Q8	2SB709A	TRANSISTOR
Q9, Q10	2SD601A	TRANSISTOR
DIODES		
D1	LN66	L.E.D
D2, D3	MA151WK	DIODE
D4, D5	MA151WK	DIODE
D6, D7	MA151WK	DIODE
D8, D9	MA151WK	DIODE
D10, D11	MA151WA	DIODE
D12, D13	MA151WA	DIODE
D14, D15	MA151WA	DIODE
D16, D17	MA151A	DIODE
OSCILLATOR		
X1	CSB420PB1	420 KHZ
RESISTORS		
R1	ERDS2TJ1R0	CARBON, 1Ω, 1/4W
R2	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R3	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R4	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R5	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R6	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R7	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R8	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R9	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R10	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R11	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R12	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R13	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R14	ERJ8GCYJ473	METAL RESISTOR (CHIP)
R15	ERJ8GCYJ472	METAL RESISTOR (CHIP)
R16	ERJ8GCYJ102	METAL RESISTOR (CHIP)
R17, R18	ERJ8GCYJ104	METAL RESISTOR (CHIP)
CAPACITORS		
C1	ECKD1H471KB	CERAMIC, 470PF, 50V
C2	ECKD1H121KB	CERAMIC, 120PF, 50V
C3	ECEA0JK101	ELECTROLYTIC, 100μF, 6.3V
MECHANISM PARTS		
101	UR64VCS229	CABINET BODY
102	UR64VCS197	BOTTOM CASE
103	UR64EC121	COVER, BATTERY
104	UR64CT122	RUBBER, SWITCH
105	UR64BT123A	BUTTON
106	UR64SB125	PLATE
107	UR52TD101	TERMINAL (COMMON)
108	UR64TD127	TERMINAL (+)
109	UR64TD128	TERMINAL (-)
SCREWS,WASHERS AND NUTS		
N101	XTS26+12GFZ	SCREW

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	LC7818	I.C. SELECT
IC201, IC202	M5238P	I.C. BUFFER AMP., BUFFER
IC203	TC9177P	I.C. VOLUME CONTROL
IC301	M5219P	I.C. OPERATION AMP
IC302	SVI3101	I.C. POWER AMP
IC401	LA7224	I.C. REMOTE
IC402	AN78N05	I.C. LEGULATOR
IC403	LC6523C-3068	I.C. CONTROL
IC404	DN74LS145	I.C. DATA CODE
TRANSISTORS		
Q101	UN4211	TRANSISTOR
Q102	2SA1309Q	TRANSISTOR
Q201, Q202	2SK301	TRANSISTOR
Q301, Q302	2SK117-GR	TRANSISTOR
Q401, Q402	2SA1309Q	TRANSISTOR
Q403	UN4111	TRANSISTOR
Q405, Q406	UN4211	TRANSISTOR
Q451, Q452	UN4211	TRANSISTOR
Q453	UN4111	TRANSISTOR
Q454	2SC3311A-Q	TRANSISTOR
Q455	UN4111	TRANSISTOR
Q501, Q502	2SA1309Q	TRANSISTOR
Q503	2SC3311A-Q	TRANSISTOR
DIODES		
D101, D102	MA165	DIODE
D103, D104	MA165	DIODE
D105, D106	MA165	DIODE
D201, D401	MA165	DIODE
D402, D403	MA165	DIODE
D404	MA4056-M	DIODE
D405, D406	MA165	DIODE
D408	PN323B	PHOTO INTRRUPTER
D409 ⚠	SVD1SR35200A	RECTIFIER
D410	MA165	DIODE
D411, D412	LN28RP	LED
D413, D414	LN28RP	LED
D415, D416	LN28RP	LED
D417, D418	LN28RP	LED
D419, D420	LN28RP	LED
D421	LN28RP	LED
D451, D452	MA165	DIODE
D453, D454	MA29WA	DIODE
D456	MA165	DIODE
D501	MA4150M	DIODE
D502	MA4082H	DIODE, SI
D503	20A90	DIODE
D504	MA165	DIODE
D601, D602	GP15GLF	DIODE
D603, D604	GP15GLF	DIODE
D605, D606 ⚠	SVD1SR35200A	RECTIFIER
D607, D608 ⚠	SVD1SR35200A	RECTIFIER
D609, D610 ⚠	SVD1SR35200A	RECTIFIER
D611, D612 ⚠	SVD1SR35200A	RECTIFIER
D613, D614	MA4075M	DIODE
I.C.PROTECTORS		
ICP601	SRUF38	I.C.PROTECTOR
ICP602,ICP603	SRUF75	I.C.PROTECTOR
POSISTORS		
PS501	SRPBB47101	POSISTOR
PS502	SRPBF47101	POSISTOR
COILS AND TRANSFORMERS		
L301, L302	SLQY07G-40	CHOKE COIL
L402	SLD9B3-Z	DETECTION COIL
L403	ELEPK1R2MA	COIL
L501	ELEPG221KA	CHOCK COIL
L601, L602 (EGA)	SLQX400-D	COIL
T1 ⚠ (E, EGA, EF) (EH, EB, EI)	SLT5M490-W	POWER TRANSFORMER
T1 ⚠ (EK, XL)	SLT5M491-W	POWER TRANSFORMER
OSCILLATORS		
X401	SVFCSA400MG	CERAMIC FILTER
LAMPS		
PL601	XAMS6Q8C	LAMP
FUSES		
F1 ⚠ (EK)	XBA2C08TB0	FUSES 250V,T0.8A, T0.8A250
F1 ⚠ (E, EGA, EF) (EH, EB, EI) (XL)	XBA2C08TR0	FUSE, T0.8A250V
SWITCHES		
S401, S402	SSG13	SW, VOL
S403, S404	SSG13	SW, BALANCE
S405, S406	SSG13	SW, CD/AUX
S407, S408	SSG13	SW, TAPE/BASS
S601	ESB8216V	PUSH SWITCH
BATTERY		
BAT1	BR2325-1HC	PRIMARY BATTERY

Ref. No.	Part No.	Description
PACKINGS		
P1-1 (E, EGA, EK) (EH, EB, EI) (XL)	SPG5839	CARTON BOX
P1-1 (EF)	SPG5841	CARTON BOX
P1-2	SPS4841	PAD
P1-3	SPS4842	PAD
P1-4	SPS5007	PAD
P2 Ⓚ	SPP754	PROTECTION COVER
P2 Ⓢ	XZB34X30A02	PROTECTION COVER
P3 (E, EK, EF) (EH, EB, EI) (XL)	SQFUCD50-KE	INSTRUCTION BOOK
P3	SQFUCD50-KG	INSTRUCTION BOOK
(EGA)		
ACCESSORIES		
A1 ⚠ (EB)	SFDAC05E02	POWER CORD
A1 ⚠ (E, EGA, EF) (EH, EI)	SFDAC05E03	POWER CORD
A1 ⚠ (EK)	SFDAC05G02	POWER CORD
A1 ⚠ (XL)	SJA173	POWER CORD
A2	SJP2200	CORD
A3	SJP2201	CORD
A4	SJP2202	CORD
A5	SJPD5-1	PHONO OUTPUT CORD
A6	SUM3NE	PRIMARY BATTERY
A7	RJP120ZBS-H	AC PLUG ADAPTOR

■ RESISTORS & CAPACITORS

Numbering System of Resistor

Example:

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)

ERJ	6G	C	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage	Value (1000pF)	Tolerance	Peculiarity

ECEA	50	M	R47
Type	Voltage	Peculiarity	Value (0.47μF)

Resistor Type	Wattage	Tolerance
ERD: Carbon Resistor	10 : 1/8W	F : ±1%
ERC: Solid Resistor	25 : 1/4W	G : ±2%
ERF: Incombustible Box-Shaped Wire-Wound Resistor	50 : 1/2W	J : ±5%
	18 : 1/8W	K : ±10%
	14 : 1/4W	M : ±20%
	12 : 1/2W	
ERG: Metal Oxide-Film Resistor	1 : 1W	
	2 : 2W	
ERM: Wire-Wound Resistor	3 : 3W	
	S1 : 1/2W	
ERO: Superstable Metal Film Resistor	S2 : 1/4W	
	6G : 1/10W	
	8G : 1/8W	
ERX: Metal-Film Resistor		
RRJ: ERJ: Chip Resistor		

Capacitor Type	Voltage	Tolerance
ECCD: Ceramic Capacitor (Chitacon)	(ECCD, ECKD Type) 1H : 50V DC 2H : 500V DC	K : ±10% M : ±20% Z : +80% −20% J : ±5% G : ±2% F : ±1% C : ±0.25pF D : ±0.5pF
ECKD: Ceramic Capacitor (Chitabarl)	(ECFD Type) C : 12V DC D : 25V DC E : 50V DC
ECFD: Semiconductor Ceramic Capacitor	(ECQ Type) 05 : 50WV DC 1 : 100WV DC
ECE□: Electrolytic Capacitor	(ECE, ECS Type) 0G : 4V 0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 1J : 63V 2A : 100V
ECS□: Tantalum Fixed Electrolytic Capacitor	
ECQ□: Polystyrenc Film Capacitor	
ECQS: Polystyrene Film Capacitor	
ECQS: Polypropylene Film Capacitor	
ECQV: T.F Capacitor	
ECU□: RCU□: Chip Capacitor	
ECBT: Cylindrical Ceramic Capacitor	

※ Capacity are in microfarads (μF) unless specified otherwise, P=Pico-farads.
※ Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000Ω, 1M=1,000KΩ

Ref. No.	Part No.
RESISTORS	
R101	ERDS2TJ103
R102	ERDS2TJ332
R103	ERDS2TJ224
R104	ERDS2TJ274
R105, R106	ERDS2TJ224
R107	ERDS2TJ123
R109, R110	ERDS2TJ223
R111, R112	ERDS2TJ223
R113, R114	ERDS2TJ223
R115, R116	ERDS2TJ681
R117, R118	ERDS2TJ123
R119	ERDS2TJ123
R120	ERDS2TJ563
R151, R152 (EGA)	ERDS2TJ222
R153, R154 (EGA)	ERDS2TJ222
R155, R156 (EGA)	ERDS2TJ222
R201	ERDS2TJ681
R205, R206	ERDS2TJ222
R207, R208	ERDS2TJ122
R211, R212	ERDS2TJ123
R213, R214	ERDS2TJ332
R215, R216	ERDS2TJ122
R217	ERDS2TJ684
R219	ERDS2TJ123
R220	ERDS2TJ224
R221, R222	ERDS2TJ563
R223, R224	ERDS2TJ474
R225	ERDS2TJ225
R301, R302	ERDS2TJ332
R303	ERDS2TJ684
R305, R306	ERDS2TJ473
R307, R308	ERDS2TJ103
R309, R310	ERDS2TJ473
R311, R312	ERDS2TJ153
R313, R314	ERDS2TJ152
R315, R316	ERDS2TJ473
R317, R318	ERDS1FJ4R7
R319, R320	ERDS1FJ100

Ref. No.	Part No.
R401, R402	ERDS2TJ151
R403, R404	ERDS2TJ151
R405, R406	ERDS2TJ151
R407, R408	ERDS2TJ151
R409, R410	ERDS2TJ151
R411	ERDS2TJ151
R412, R413	ERDS2TJ123
R414, R415	ERDS2TJ123
R416, R417	ERDS2TJ123
R418, R419	ERDS2TJ123
R420, R421	ERDS2TJ123
R424	ERDS2TJ333
R425	ERDS2TJ103
R426	ERDS2TJ223
R427	ERDS2TJ390
R428	ERDS2TJ102
R429	ERDS2TJ101
R430	ERDS2TJ564
R435	ERDS2TJ6R8
R436, R437	ERDS2TJ472
R438	ERDS2TJ472
R439	ERDS2TJ221
R440	ERDS2TJ223
R443	ERDS2TJ102
R444, R445	ERDS2TJ123
R451	ERDS2TJ153
R452	ERDS2TJ333
R453, R454	ERDS2TJ153
R455	ERDS2TJ153
R456	ERDS2TJ222
R457, R458	ERDS2TJ103
R501, R502	ERDS2TJ153
R503	ERG1ANJP152S
R505	ERDS2TJ123
R506	ERDS2TJ681
R507, R508	ERDS2TJ822
R509	ERDS2TJ223
R510	ERDS2TJ273
R601	ERDS2TJ154
R603, R604	ERG1CJP122S
R605	ERDS2TJ103
CAPACITORS	

Ref. No.	Part No.
C101	ECEA1CKS100
C102	ECEA1AU221
C103	ECEA1EKS4R7
C104	ECFTD473KXL
C151, C152 (EGA)	ECCC1H221K
C153, C154 (EGA)	ECCC1H221K
C155, C156 (EGA)	ECCC1H221K
C201, C202	ECEA1CU100
C203, C204	ECEA1HS0R1
C205, C206	ECEA1HU010
C207, C208	ECEA1HU010
C209, C210	ECEA1CN100S
C211	ECEA1HS0R1
C212	ECEA1HU010
C213	ECKD1H103PF
C301, C302	ECKD1H331KB
C303, C304	ECEA1HKS2R2
C305, C306	ECEA1CKS220
C307, C308	ECQM1H102JZ
C309, C310	ECCD1H150KC
C311 (E, EGA, EF) (EH, EB, EI) (XL)	ECQM1H223JZ
C311 (EK)	ECQM1H473JZ
C312 (E, EGA, EF) (EH, EB, EI) (XL)	ECQM1H223JZ
C312 (EK)	ECQM1H473JZ
C313	ECEA1CKS330
C314	ECEA1HKS0R1
C315, C316	ECEA1HKS4R7
C317, C318	ECEA1HKS010
C319, C320	ECQM1H333JZ
C321, C322 (EK)	ECQM1H473JZ

Ref. No.	Part No.
C351, C352 (EGA)	ECCC1H221K
C353, C354 (EGA)	ECKD1H103PF
C401	ECKD1H471KB
C402	ECFTD473KXL
C403	ECEA1EKS4R7
C404	ECEA1CKS220
C405	ECEA1CKS100
C406	ECEA1AS330
C407	ECEA1CU100
C408	ECKD1H102KB

Ref. No.	Part No.
C412	ECEA1HUR22
C413	ECCD1H220K
C414	ECCD1H820K
C417	ECEA1HUR22
C418	ECEA1VU100
C419	ECEA0JKS470
C420	ECEA1CU101
C423	ECKW1H102ZF
C451	ECEA1CKS100
C452	ECKD1H102KB
C453	ECKD1H103PF
C501	ECEA1VU100

Ref. No.	Part No.
C502	ECEA1CKS100
C503	ECEA1VU100
C504	ECKD1H103PF
C601	ECKWNS103ZVS
C602	ECKD2H103PE
C603, C604	ECKD1H103PF
C605, C606	ECETS42V472U
C607, C608	ECEB1CU222
C609	ECEA16V1000
C610	ECKD1H103PF
C611, C612	ECEA1CK101
C613	ECKD1H103PF
C614	ECKW1H333ZF

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